Space Weather Forecast

Issued on Monday, 14 November 2022 at 00:50 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate class flares (Minor-Moderate radio blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been Low with numerous minor Common-class flares, mostly from the two larger regions in the northwest. These are the two largest regions on the disc, but neither are showing significant magnetic complexity at the moment. One of them has shown some proliferation of its intermediate spots, however. There are currently four numbered sunspot regions on the visible disc but the remaining two regions are both small and simple.
A filament (arc of plasma held above the Sun's surface) liftoff was observed from near south centre disc this morning which gave a very weak and slow Coronal Mass Ejection (CME). This is expected to pass mostly below Earth's orbit, and is unlikely to give significant impacts if it does give a glancing blow. Otherwise no Earth-directed CMEs have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind was indicative of waning coronal hole fast wind influences. Wind speeds were slightly elevated, largely between 430-500 km/s. Total magnetic field strength has been weak throughout, with the north-south component fluctuating weakly. Geomagnetic activity was Quiet (Kp 0-2) throughout.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be generally Low, with a chance of isolated Moderate flare activity. The most likely source of flare activity is from the two largest regions on the disc in the northwest quadrant.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are likely to give significant impacts at Earth. Some minor CME effects are possible through this period, however any potential impacts would be expected to be weak. A very weak and slow CME may give very minor impacts on 18 Nov.
Solar winds are currently at slightly elevated levels due to waning coronal hole influences. Winds are expected to continue to slowly decline during Day 1 (14 Nov). There are two small coronal holes which are likely to give some enhancement on Day 2 (15 Nov). They may prolong the period of slightly elevated wind speeds into Days 3 or 4 (16-17 Nov), although confidence is low due to differences from the previous rotation. Geomagnetic activity is expected to be predominantly Quiet to Unsettled through the period, perhaps with a chance of isolated Active intervals if we get impacts associated with the two coronal holes on Day 2, or if we see any weak CME related enhancements.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is most likely to persist at background levels. However, there is a slight chance of an increase in solar radiation over normal conditions from the two moderately large sunspot regions in the western hemisphere.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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